UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,297	07/03/2003	Kuo-Hui Li	250907-1080	3951

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EXAMINER
WEST, JEFFREY R

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 01/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	**Applicant(s)**
Office Action Summary		10/613,297	LI ET AL.
		Examiner	**Art Unit**	
		Jeffrey R. West	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 July 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>03 July 2003</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawing in Figure 2 is objected to because it does not have sufficiently descriptive labels. Blank boxes in drawings should be labeled descriptively unless it is a well-known component. For example, the blank box, "212" should be labeled something similar to "Correlation Means".

2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1, 8, and 15 are objected to because of the following informalities:

In claim 1, line 3, to avoid confusion, "to take" should be ---to obtain---. A similar change should be made claim 8, line 4 and claim 15, line 4.

In claim 1, line 11, to avoid problems of antecedent basis, "sequence in which each accumulation value" should be ---sequence, having a plurality of accumulation values, in which each accumulation value---. A similar change should be made to claim 8, line 10.

In claim 1, line 20, to avoid problems of antecedent basis, "the presence" should be ---a presence---. A similar change should be made to claim 8, line 18 and claim 15, line 27.

In claim 1, line 24, to avoid problems of antecedent basis, "the maximum" should be ---a maximum---. A similar change should be made to claim 8, line 21 and claim 15, line 24.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 6, 7, 13, 14, 19, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 is considered to be vague and indefinite because it defines the

statistic according to the equation: $E_r(N) = \sum_{n=0}^{(N-1)+L-1} |r(n)|^2$. Parent claim 5,

however, already indicates that the "third means evaluates said statistic over

(N-1) times L number of samples of said sample sequence". Therefore, it is

unclear how claim 6 can define the statistic over (N-1) times (L-1) when claim

5 already defined the statistic over (N-1) times (L). Claims 7, 13, 14, 19 and

20 are rejected under 35 U.S.C. 112, second paragraph, for similar reasons.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

7. Claims 1-5, 8-12, and 15-18 are rejected under 35 U.S.C. 103(a) as

being unpatentable over U.S. Patent Application Publication No.

2001/0050948 to Ramberg et al. in view of U.S. Patent No. 5,960,048 to

Haartsen.

With respect to claim 1, Ramberg discloses an apparatus for detection of

direct sequence spread spectrum signals in networking systems comprising a

detection unit adapted to take a sample sequence from a preamble of a newly

arrived network packet (0032, lines 1-7) comprising a first means for

calculating a sequence of correlation measures between said sample

sequence and a pseudo-noise code sequence of length L, where L is a

positive integer (0006, lines 1-10 and 0037, lines 1-13), a second means for

calculating an accumulation sequence in which each accumulation value

thereof is obtained by summing N correlation measures, where N is a

predetermined integer number (0006, lines 10-17 and 0037, lines 13-19), a

third means for evaluating a power statistic of said sample sequence over

multiple samples (0036, lines 24-36), normalizing the maximum of said

accumulation sequence (i.e. correlation total corresponding to a maximum

that indicates alignment) (0007, lines 13-19 and 0039, lines 1-13) with respect

to said power statistic of said sample sequence (0046, lines 1-6 and 0047,

lines 11-14) and a decision making unit for determining the presence of direct

sequence spread spectrum signals based on a comparison between a

predetermined threshold and said normalized maximum of said accumulation

sequence (0046, lines 6-10 and 0047, lines 14-15).

Further, this comparison between a predetermined threshold and a

maximum normalized by a power statistic is art-recognized to be equivalent to

a comparison between the power statistic and the power threshold scaled by

the maximum, as apparent through equation manipulation.

As noted above, the invention of Ramberg teaches many of the features of

the claimed invention, and while Ramberg does teach performing correlation

and accumulating the correlation results to determine a maximum value,

Ramberg does not explicitly state that the correlation is accumulated by

summing N correlation measures selected at an interval of L or that the

statistic is evaluated over a multiple of L number of samples.

Haartsen teaches a method and arrangement for receiving a symbol

sequence comprising first means for calculating a sequence of correlation

measures between a detected sample sequence and a pseudo-noise code

sequence of length L (column 8, lines 59-66), where L is a positive integer, a

second means for calculating an accumulation sequence in which each

accumulation value thereof is obtained by summing N correlation measures

(i.e. N corresponding to the number of segments) that are selected at an

interval of L from said sequence of correlation measures (column 7, lines 19-

25, column 8, line 66 to column 9, line 12 and column 9, lines 31-41), where

N is a predetermined integer number, a third means for evaluating a statistic

(i.e. maximum) of the correlation measures over a multiple of L number of

samples (column 13, line 48 to column 14, line 17), and a decision making

unit for determining the presence of direct sequence spread spectrum signals

based on a comparison between said statistic (i.e. maximum) and a

predetermined threshold (column 14, lines 17-26).

With respect to claim 2, the equation:

$$A_m(N) = \sum_{k=0}^{N-1} C(m + k \cdot L), \; m = 0,1,2, \; \ldots \; , L-1$$

is interpreted to be a running

summation of correlation values. For example, if m is an index that runs from

0, 1, 2 . . .L-1 and k is an index that runs from 0, 1, 2, . . . N-1, and L is a set

length of, for example, 7, C(m+k*L) would proceed as C(0+0*7)=C(0),

C(1+0*7)=C(1), C(2+0*7)=C(2), C(3+0*7)=C(3), C(4+0*7)=C(4),

C(5+0*7)=C(5), C(6+0*7)=C(6), C(0+1*7)=C(7), C(1+1*7)=C(8),

C(2+1*7)=C(9), C(3+1*7)=C(10), C(4+1*7)=C(11), C(5+1*7)=C(12),

C(6+1*7)=C(13), C(0+2*7)=C(14), C(1+2*7)=C(15), etc. Therefore, since the

accumulation of Haartsen is a running summation, that first sets values for the

number of segments (N) (column 7, lines 19-25) and pseudo-code length (L)

(column 10, lines 32-35) and then calculates a running summation of the

correlation for each segment (column 6, lines 9-19) continuously adding each

newly determined summation to the previous summation (column 10, line 65

to column 11, line 14), the accumulation of Haartsen is considered to be an

equivalent summation that would be modeled by the equation of claim 2.

With respect to claim 5, since the statistic (i.e. maximum) is evaluated as a

total summation of the correlations between each segment of the plurality (i.e.

N) segments and the pseudo-code having a sequence of coefficients of

length L (column 15, lines 2-9), the statistic is evaluated as a maximum of the

summation of the correlations of each segment over the length of the pseudo-

code. Therefore this statistic is evaluated as a summation from the

correlation of the first segment (N1) and first pseudo-code coefficient (L1) to

the last segment (N) and the last pseudo-code coefficient (L) and is thereby

evaluated either from 0 to (N-1)(L-1) or from 1 to (N)(L). Therefore, as may

best be understood, Haartsen meets the limitation of claim 5.

Further, with respect to claim 3 and 4, since the maximum value

normalized by the power statistic is compared to a predetermined threshold in

order to determine the presence of direct sequence spread spectrum signals while the number of segments (i.e. N) increases (column 11, lines 33-39 and column 15, lines 3-9) (i.e. N1, N1+1, N1+2, etc), the conditions in claims 3 and 4, where the maximum value normalized by the power statistic is compared to the reciprocal of the predetermined threshold, can also hold true.

It would have been obvious to one having ordinary skill in the art to modify the invention of Ramberg to specify that the correlation is accumulated by summing N correlation measures selected at an interval of L and that the statistic is evaluated over a multiple of L number of samples, as taught by Haartsen, because, as suggested by Haartsen, the combination would have provided means for performing the correlation of Ramberg by dividing the input sequence into segments and performing accumulated correlation and evaluation of the result of accumulation over a length corresponding to the segment lengths (column 3, line 45 to column 4, line 21) in order to enable the use of shorter correlators, thereby increasing correlation reception rates (column 2, lines 60-63) while improving error correction and power efficiency (column 4, lines 21-39).

8. Claims 6, 7, 13, 14, 19 and 20, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramberg et al. in view of Haartsen and further in view of U.S. Patent No. 6,058,138 to Fukumasa et al.

As noted above, the invention of Ramberg and Haartsen teaches many of the features of the claimed invention and while Ramberg and Haartsen

teaches determining a power value as a statistic, the combination does not

explicitly include the formulas for determining the power.

Fukumasa teaches a radio reception system providing improved

transmission quality including means for determining the power of a sequence

of values by a sum of squares (column 10, lines 37-50) and a sum of absolute

values of the sequence (column 10, line 63 to column 11, line 7).

It would have been obvious to one having ordinary skill in the art to modify

the invention of Ramberg and Haartsen to include determining the power of a

sequence using a sum of squares or sum of absolute values, as taught by

Fukumasa, because Fukumasa suggests a corresponding, conventional,

method for determining the power, as required in the invention of Ramberg

and Haartsen, that would have provided accurate results while allowing the

user to choose either a computationally complicated or simple equation based

on corresponding desired accuracy (column 10, line 37 to column 11, line 7).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to

Applicant's disclosure.

U.S. Patent Application Publication No. 2003/0031237 to Bachl et al.

teaches a method for improving the reception of a CDMA receiver, and a

CDMA receiver with improved reception.

U.S. Patent Application Publication No. 2004/0228424 to Baldwin et al.

teaches a receiver with an analog barker detector.

U.S. Patent Application Publication No. 2004/0161022 to Glazko et al.

teaches an efficient back-end channel matched filter.

U.S. Patent No. 6,763,056 to Ohsuge teaches a path timing detection

circuit and detection method thereof including a correlation and accumulator

for correlating an input sequence with a PN sequence.

U.S. Patent No. 6,611,550 to Whight et al. teaches a spread spectrum

receiver including means for obtaining a running average of a sequence and

determining which spread spectrum signals correspond to a maximum value

in the running average.

10. Any inquiry concerning this communication or earlier communications

from the examiner should be directed to Jeffrey R. West whose telephone

number is (571)272-2226. The examiner can normally be reached on

Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The

fax phone number for the organization where this application or proceeding is

assigned is 703-872-9306.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status

information for published applications may be obtained from either Private

PAIR or Public PAIR. Status information for unpublished applications is

available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on

access to the Private PAIR system, contact the Electronic Business Center

(EBC) at 866-217-9197 (toll-free).

jrw
December 23, 2004

HAL WACHSMAN
PRIMARY EXAMINER